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EXAMINER	
SCIACCA, SCOTT M	

ART UNIT	PAPER NUMBER
2446	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/728,676	KUMAR, ANIL K.
	Examiner	Art Unit
	Scott M. Sciacca	2446

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)[x] Responsive to communication(s) filed on *12 August 2009*.
2a)[ ] This action is **FINAL**. 2b)[x] This action is non-final.
3)[ ] Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)[x] Claim(s) *1-22 and 24-30* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)[ ] Claim(s) _____ is/are allowed.
6)[x] Claim(s) *1-22 and 24-30* is/are rejected.
7)[ ] Claim(s) _____ is/are objected to.
8)[ ] Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)[ ] The specification is objected to by the Examiner.
10)[x] The drawing(s) filed on *04 December 2003* is/are: a)[x] accepted or b)[ ] objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)[ ] The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)[ ] Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)[ ] All b)[ ] Some * c)[ ] None of:
1.[ ] Certified copies of the priority documents have been received.
2.[ ] Certified copies of the priority documents have been received in Application No. _____.
3.[ ] Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) [x] Notice of References Cited (PTO-892)
2) [ ] Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) [ ] Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) [ ] Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) [ ] Notice of Informal Patent Application
6) [ ] Other: _____.

DETAILED ACTION

This office action is responsive to pre-appeal brief request filed on August 12, 2009. Claims 1-22 and 24-30 are pending in the application.

WITHDRAWL OF FINALITY OF LAST OFFICE ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 24-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 24 is drawn to a "machine-readable medium". According to paragraph [0015] on page 5 of the specification, the machine-readable medium may include a carrier wave. A signal is not statutory because it is not limited to a process, machine, article of manufacture or composition of matter. In order for the claimed machine-readable medium to be statutory, it should be recited as a "non-transitory machine-readable storage medium" in order to make it clear that the claim does not include signals and is limited to statutory forms of machine-readable media (i.e., memory).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-22 and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wentink (US 7,136,392) in view of Cimini, Jr. et al. (US 7,301,965) and Lin et al. (US 6,804,222).

Regarding Claim 1, Wentink teaches a method comprising:

in response, at least in part, to a request for a service from a system, determining a quality of service to assign to an application to be executed by the system to provide the service, the quality of service based, at least in part, on one or more service characteristics of the application (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay"* – See Col. 1, lines 20-28; *"an internal queue in any one of the stations is configured to delay and/or release data messages of a given priority level according to a set of rules"* – See Col. 2, lines 16-19); and

allocating one or more resources to the application, the one or more resources being based, at least in part, on the quality of service (*"Quality of service (QoS) mechanisms allocate transmission resources to different types or classes of data traffic so that certain traffic classes can be preferentially served over other classes"* – See Col. 1, lines 16-20).

Wentink does not explicitly teach determining a size of packets to be used for transmitting data associated with the service. Nor does Wentink explicitly teach allocating to the application, the one or more resources being based, at least in part, on a media access control service data unit (MSDU) size.

However, Cimini teaches determining a size of packets to be used for transmitting data based on the quality of service (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet length/average throughput) Eq. (8)"* – See Col. 8, lines 39-40; Guaranteed throughput is considered to be a quality of service attribute. Thus, calculating an MSDU size as a function of desired throughput is the same as determining a size of packets based on the quality of service).

Cimini further teaches allocating resources to an application, the resources being based on a media access control service data unit (MSDU) size (*"the packet shaping mechanism sets a maximum MSDU size limit based on node data rate so that the maximum transmission time of all the nodes is the same"* – See Col. 1, lines 42-44; As shown above, Wentink mentions several multimedia applications which rely on networks

as a resource. Cimini allocates network resources (i.e., transmission time) by controlling the MSDU size).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Wentink of determining a quality of service to assign to an application to include the additional step of determining a size of packets to be used for transmitting data. As shown by Wentink, multiple stations share a communication medium (*"Stations of a communication network have internal queues for accumulating and transmitting data messages over a shared communication channel"* – See Abstract). According to Cimini, it is possible for multiple stations sharing a communication medium to experience different data rates. Determining a size of packets to be used for transmitting data provides the advantage of equally distributing transmission times of all nodes which results in improved network capacity (*"Because the packet shaping mechanism sets a maximum MSDU size limit based on node data rate so that the maximum transmission time of all the nodes is the same, network channel resources are equally distributed among all the nodes. By applying different limits in such a manner, it is possible to improve network capacity when there are mixed rate nodes in the network"* – See Col. 1, lines 42-49).

Wentink does not explicitly teach mapping one or more service characteristics to a class of service database and servicing the application in a bearer plane.

However, Lin does teach mapping one or more service characteristics to a class of service database (*"FIG. 5 depicts a process for classifying a frame that can be used in a QoS-driven WLAN according to the present invention"* – See Col. 13, lines 47-49;

"The QME examines the frame for information included in the received frame that is included in at least one of the classifier parameters in at least one of the classifier entries in a classification table 502" – See Col. 13, lines 51-54; *"The QME examines the entries in the classification table in the order of descending search priorities when classifying the received frame. The VSID value contained in the first matched entry is used for identifying the VS 503 and the corresponding QoS parameter set for transporting the data frame between peer LLC entities of the BSS"* – See Col. 13, lines 55-60).

Lin also teaches servicing an application in a bearer plane (*"The FCE receives a data frame associated with the user session, which can be one of a voice session, a video session, a data session and a multimedia session. The data frame contains in-band quality of service (QoS) signaling information for the user session"* – See Abstract; *"End-to-end QoS values expected by a new in-band QoS signaling session, together with the corresponding frame classifier, are extracted directly from a data frame of the new session"* – See Col. 8, lines 52-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wentink to enable servicing an application (i.e., assigning QoS parameters) in a bearer plane. Motivation for doing so would be to allow end-to-end QoS transport in networks that do not support QoS and are only capable of "best-effort" data transmission (See Lin, Col. 2, lines 28-37).

Regarding Claim 2, Wentink in view of Cimini and Lin teaches the method of Claim 1. Wentink further teaches the system comprising a modified intelligent media center (MIMC) (See Fig. 2 which shows a media station), and said determining a quality of service to assign to an application to be executed by the system to provide the service comprising determining a quality of service to assign to a multimedia application to be executed by the MIMC to provide the service (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay"* – See Col. 1, lines 20-28).

Regarding Claim 3, Wentink in view of Cimini and Lin teaches the method of Claim 2. Wentink further teaches said determining the quality of service to assign to the multimedia application comprising assigning one or more QoS (quality of service) parameters to the application (*"However, in accordance with an illustrative embodiment of the present invention, the release, for transmission, of data messages having the same level of priority is governed by a set of parameters that is common for all stations of the network"* – See Col. 2, lines 12-16), the QoS parameters being based on a class of service associated with the one or more service characteristics of the multimedia application (*"That is, an internal queue in any one of the stations is configured to delay*

and/or release data messages of a given priority level according to a set of rules that applies identically to the internal queue of any other station that handles data messages of that same priority level" – See Col. 2, lines 16-21).

Regarding Claim 4, Wentink in view of Cimini and Lin teaches the method of Claim 3. Wentink further teaches the multimedia application being a wireless application (*"Initially, it should be noted that it may be desirable to increase the probability of successful transfer of (MSDUs) across a shared channel such, for example, as the wireless medium employed by the illustrative embodiment of the present invention"* – See Col. 3, lines 51-55), and the one or more QoS parameters comprising at least one of:

AIFS (arbitration inter-frame space) (*"the highest priority traffic class is directed to a queue that waits for a minimum interframe space interval* $QIFS_0$*"* – See Col. 7, lines 19-21);

CW_{min} (minimum contention window) (*"The scheduling function of the illustrative embodiment further specifies a contention window CWmin from which a random back off is computed for each queue"* – See Col. 6, lines 56-59);

CW_{max} (maximum contention window) (*"It should be noted that although a single value of CWmax common to all stations is suggested in FIG. 5, it is also possible to provide differentiated CWmax[i] values for the respective queues"* – See Col. 8, lines 10-13); and

PF (persistence factor) (*"the persistence factor, PF, is computed using the following procedure"* – See Col. 9, lines 6-7).

Regarding Claim 5, Wentink in view of Cimini and Lin teaches the method of Claim 3. Wentink does not explicitly teach said determining the quality of service to assign to the multimedia application additionally comprising <u>determining a size of packets to be used for transmitting data</u> associated with the multimedia application from the system to a client. However, Cimini does teach determining a size of packets to be used for transmitting data (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet length/average throughput) Eq. (8)"* – See Col. 8, lines 39-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a size of packets to be used for transmitting data for the same reasons as those given with respect to Claim 1.

Regarding Claim 6, Wentink in view of Cimini and Lin teaches the method of Claim 5. Cimini further teaches said determining the size of packets comprising determining a size of an MSDU (MAC – media access layer – service data unit) based, at least in part, on at least one of the one or more service characteristics (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet*

length/average throughput) Eq. (8)" – See Col. 8, lines 39-40; Note that one of the values used to calculate the size of an MSDU is the average throughput).

Regarding Claim 7, Wentink in view of Cimini and Lin teaches the method of Claim 6. As shown above with respect to Claim 1, Wentink in view of Cimini teaches determining the size of data packets used for transmitting data based on a service characteristic (i.e., data rate). Wentink further teaches that service characteristics may include a priority associated with a class of service (*"Each internal queue of a station individually accumulates and releases, for transmission during an appropriate transmission opportunity, data messages that have a specific traffic classification and, hence, a different level of priority than those accumulated and released by other internal queues of that station"* – See Col. 2, lines 2-7). Cimini generally teaches "packet shaping" (i.e., modifying the size of packets being used to transit data) being useful for improving capacity in a network (See Col. 1, lines 42-49), except that the packet shaping is based on data rates experienced by different nodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the size of an MSDU based on a priority associated with the class of service disclosed by Wentink. One would have been motivated to do so in order to provide the desired throughput levels for services with a particular priority level (*"Transmission opportunities are thus fairly allocated between all queues containing data messages of the same priority level"* – See Wentink's Abstract).

Regarding Claim 8, Wentink in view of Cimini and Lin teaches the method of Claim 1. Wentink further teaches said allocating the one or more resources to the application based, at least in part, on the quality of service comprising assigning at least one of:

a processing throughput (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a-20e"* – See Col. 4, lines 49-51; *"Application programs stored within the memory at each wireless station are executed by its CPU"* – See Col. 4, lines 51-53);

a queue length (*"Transmission opportunities are thus fairly allocated between all queues containing data messages of the same priority level"* – See Abstract); and

memory buffer size (*"Using the information received via VxD 26c, data message units from a given session are mapped to one of these n traffic classifications and placed in a corresponding one of queues 50_0 through 50_n within data buffers 34"* – See Col. 6, lines 11-14).

Regarding Claim 9, Wentink in view of Cimini and Lin teaches the method of Claim 1. Wentink further teaches the method additionally comprising:

queuing the application for servicing (*"A method according to an illustrative embodiment of the invention comprises directing, to a first output queue at a first station of a communication network, data message units that are to be transmitted over a communication medium and that have a first traffic classification"* – See Col. 2, lines 24-28); and

scheduling the application for servicing (*"Once placed within one of the queues, the data message units are released in accordance with a coordination function (CF) implemented in a scheduler 52 which prioritizes the transmission of data message units from each queue in accordance with a defined access control algorithm"* – See Col. 6, lines 14-19).

Regarding Claim 10, Wentink teaches an apparatus comprising:

circuitry (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a 20e and a memory 22a 22e. Application programs stored within the memory at each wireless station are executed by its CPU and communicate over the WLAN through its NIC"* – See Col. 4, lines 49-54) capable of:

in response, at least in part, to a request for a service from a system, determining a quality of service to assign to an application to be executed by the system to provide the service, the quality of service based, at least in part, on one or more service characteristics of the application (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay"* – See Col. 1, lines 20-28; *"an internal queue in any one of the stations is configured to delay and/or release data messages of a given priority level according to a set of rules"* – See Col. 2, lines 16-19); and

allocating one or more resources to the application, the one or more resources based, at least in part, on the quality of service (*"Quality of service (QoS) mechanisms allocate transmission resources to different types or classes of data traffic so that certain traffic classes can be preferentially served over other classes"* – See Col. 1, lines 16-20).

Wentink does not explicitly teach determining a size of packets to be used for transmitting data associated with the service. Nor does Wentink explicitly teach allocating to the application, the one or more resources being based, at least in part, on a media access control service data unit (MSDU) size.

However, Cimini teaches determining a size of packets to be used for transmitting data based on the quality of service (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet length/average throughput) Eq. (8)"* – See Col. 8, lines 39-40; Guaranteed throughput is considered to be a quality of service attribute. Thus, calculating an MSDU size as a function of desired throughput is the same as determining a size of packets based on the quality of service).

Cimini further teaches allocating resources to an application, the resources being based on a media access control service data unit (MSDU) size (*"the packet shaping mechanism sets a maximum MSDU size limit based on node data rate so that the maximum transmission time of all the nodes is the same"* – See Col. 1, lines 42-44; As shown above, Wentink mentions several multimedia applications which rely on networks

as a resource. Cimini allocates network resources (i.e., transmission time) by controlling the MSDU size).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Wentink of determining a quality of service to assign to an application to include the additional step of determining a size of packets to be used for transmitting data for the same reasons as those given with respect to Claim 1.

Wentink does not explicitly teach mapping one or more service characteristics to a class of service database and circuitry operating in a bearer plane of a communications environment.

However, Lin does teach mapping one or more service characteristics to a class of service database (*"FIG. 5 depicts a process for classifying a frame that can be used in a QoS-driven WLAN according to the present invention"* – See Col. 13, lines 47-49; *"The QME examines the frame for information included in the received frame that is included in at least one of the classifier parameters in at least one of the classifier entries in a classification table 502"* – See Col. 13, lines 51-54; *"The QME examines the entries in the classification table in the order of descending search priorities when classifying the received frame. The VSID value contained in the first matched entry is used for identifying the VS 503 and the corresponding QoS parameter set for transporting the data frame between peer LLC entities of the BSS"* – See Col. 13, lines 55-60).

Lin also teaches servicing an application in a bearer plane (*"The FCE receives a data frame associated with the user session, which can be one of a voice session, a video session, a data session and a multimedia session. The data frame contains in-band quality of service (QoS) signaling information for the user session"* – See Abstract; *"End-to-end QoS values expected by a new in-band QoS signaling session, together with the corresponding frame classifier, are extracted directly from a data frame of the new session"* – See Col. 8, lines 52-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wentink to enable servicing an application (i.e., assigning QoS parameters) in a bearer plane for the same reasons as those given with respect to Claim 1.

Regarding Claim 11, Wentink in view of Cimini and Lin teaches the apparatus of Claim 10. Wentink further teaches the system comprising a modified intelligent media center (MIMC) (See Fig. 2 which shows a media station), and the circuitry that is capable of determining a quality of service to assign to an application to be executed by the system to provide the service is capable of determining a quality of service to assign to a multimedia application to be executed by the MIMC to provide the service (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--*

with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay" – See Col. 1, lines 20-28).

Regarding Claim 12, Wentink in view of Cimini and Lin teaches the apparatus of Claim 11. Wentink further teaches said circuitry capable of determining the quality of service to assign to the multimedia application also being capable of assigning one or more QoS (quality of service) parameters to the multimedia application (*"However, in accordance with an illustrative embodiment of the present invention, the release, for transmission, of data messages having the same level of priority is governed by a set of parameters that is common for all stations of the network"* – See Col. 2, lines 12-16).

Regarding Claim 13, Wentink in view of Cimini and Lin teaches the apparatus of Claim 12. Wentink further teaches the multimedia application being a wireless application (*"Initially, it should be noted that it may be desirable to increase the probability of successful transfer of (MSDUs) across a shared channel such, for example, as the wireless medium employed by the illustrative embodiment of the present invention"* – See Col. 3, lines 51-55), and the one or more QoS parameters comprising at least one of:

AIFS (arbitration inter-frame space) (*"the highest priority traffic class is directed to a queue that waits for a minimum interframe space interval* $QIFS_0$*"* – See Col. 7, lines 19-21);

CW_{min} (minimum contention window) (*"The scheduling function of the illustrative embodiment further specifies a contention window CWmin from which a random back off is computed for each queue"* – See Col. 6, lines 56-59);

CW_{max} (maximum contention window) (*"It should be noted that although a single value of CWmax common to all stations is suggested in FIG. 5, it is also possible to provide differentiated CWmax[i] values for the respective queues"* – See Col. 8, lines 10-13); and

PF (persistence factor) (*"the persistence factor, PF, is computed using the following procedure"* – See Col. 9, lines 6-7).

Regarding Claim 14, Wentink in view of Cimini and Lin teaches the apparatus of Claim 12. Wentink further teaches said circuitry capable of determining the quality of service to assign to the multimedia application also being capable of determining a size of packets to be used for transmitting data associated with the multimedia application from the system to a client (*"Each contention window value is 1 octet in length and contains an unsigned integer"* – See Col. 8, lines 47-48).

Regarding Claim 15, Wentink in view of Cimini and Lin teaches the apparatus of Claim 10. Wentink further teaches said circuitry capable of allocating the one or more resources to the application based, at least in part, on the quality of service also being capable of assigning at least one of:

a processing throughput (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a-20e"* – See Col. 4, lines 49-51; *"Application programs stored within the memory at each wireless station are executed by its CPU"* – See Col. 4, lines 51-53);

a queue length (*"Transmission opportunities are thus fairly allocated between all queues containing data messages of the same priority level"* – See Abstract); and

memory buffer size (*"Using the information received via VxD 26c, data message units from a given session are mapped to one of these n traffic classifications and placed in a corresponding one of queues 50_0 through 50_n within data buffers 34"* – See Col. 6, lines 11-14).

Regarding Claim 16, Wentink in view of Cimini and Lin teaches the apparatus of Claim 10. Wentink further teaches that said circuitry is additionally capable of:

queuing the application for servicing (*"A method according to an illustrative embodiment of the invention comprises directing, to a first output queue at a first station of a communication network, data message units that are to be transmitted over a communication medium and that have a first traffic classification"* – See Col. 2, lines 24-28); and

scheduling the application for servicing (*"Once placed within one of the queues, the data message units are released in accordance with a coordination function (CF) implemented in a scheduler 52 which prioritizes the transmission of data message units*

from each queue in accordance with a defined access control algorithm" – See Col. 6, lines 14-19).

Regarding Claim 17, Wentink teaches a system comprising:

one or more applications to be executed to provide one or more services to one or more clients (*"Application programs stored within the memory at each wireless station are executed by its CPU and communicate over the WLAN through its NIC"* – See Col. 4, lines 51-54);

one or more resources to support the execution of the one or more applications (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a-20e and a memory 22a-22e"* – See Col. 4, lines 49-51);

a wireless network interface card to receive from the one or more clients, one or more requests for a service (*"In any event, and with continued reference to the illustrative communication network of FIG. 1, it will be seen that each of wireless stations 12a 12e includes a respective network interface controller (NIC) 16a 16e that is coupled to a corresponding antenna 18a 18e"* – See Col. 4, lines 45-49); and

circuitry communicatively coupled to the wireless network interface card, and capable of:

in response, at least in part, to a request for a service, determining a quality of service to assign to one of the applications to provide one of the one or more services, the quality of service based, at least in part, on one or more service characteristics of the application (*"For example, in a network that supports multimedia services like video-*

on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay" – See Col. 1, lines 20-28; *"an internal queue in any one of the stations is configured to delay and/or release data messages of a given priority level according to a set of rules"* – See Col. 2, lines 16-19); and

allocating at least one of the one or more resources to the application, the at least one of the one or more resources based, at least in part, on the quality of service (*"Quality of service (QoS) mechanisms allocate transmission resources to different types or classes of data traffic so that certain traffic classes can be preferentially served over other classes"* – See Col. 1, lines 16-20).

Wentink does not explicitly teach determining a size of packets to be used for transmitting data associated with the service. Nor does Wentink explicitly teach allocating to the application, the one or more resources being based, at least in part, on a media access control service data unit (MSDU) size.

However, Cimini teaches determining a size of packets to be used for transmitting data (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet length/average throughput) Eq. (8)"* – See Col. 8, lines 39-40; Guaranteed throughput is considered to be a quality of service attribute. Thus,

calculating an MSDU size as a function of desired throughput is the same as determining a size of packets based on the quality of service).

Cimini further teaches allocating resources to an application, the resources being based on a media access control service data unit (MSDU) size (*"the packet shaping mechanism sets a maximum MSDU size limit based on node data rate so that the maximum transmission time of all the nodes is the same"* – See Col. 1, lines 42-44; As shown above, Wentink mentions several multimedia applications which rely on networks as a resource. Cimini allocates network resources (i.e., transmission time) by controlling the MSDU size).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Wentink of determining a quality of service to assign to an application to include the additional step of determining a size of packets to be used for transmitting data for the same reasons as those given with respect to Claim 1.

Wentink does not explicitly teach mapping one or more service characteristics to a class of service database and said circuitry being capable of operating in a bearer plane of a communications environment.

However, Lin does teach mapping one or more service characteristics to a class of service database (*"FIG. 5 depicts a process for classifying a frame that can be used in a QoS-driven WLAN according to the present invention"* – See Col. 13, lines 47-49; *"The QME examines the frame for information included in the received frame that is included in at least one of the classifier parameters in at least one of the classifier*

entries in a classification table 502" – See Col. 13, lines 51-54; *"The QME examines the entries in the classification table in the order of descending search priorities when classifying the received frame. The VSID value contained in the first matched entry is used for identifying the VS 503 and the corresponding QoS parameter set for transporting the data frame between peer LLC entities of the BSS"* – See Col. 13, lines 55-60).

Lin also teaches servicing an application in a bearer plane (*"The FCE receives a data frame associated with the user session, which can be one of a voice session, a video session, a data session and a multimedia session. The data frame contains in-band quality of service (QoS) signaling information for the user session"* – See Abstract; *"End-to-end QoS values expected by a new in-band QoS signaling session, together with the corresponding frame classifier, are extracted directly from a data frame of the new session"* – See Col. 8, lines 52-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wentink to enable servicing an application (i.e., assigning QoS parameters) in a bearer plane for the same reasons as those given with respect to Claim 1.

Regarding Claim 18, Wentink in view of Cimini and Lin teaches the system of Claim 17. Wentink further teaches the system comprising a modified intelligent media center (MIMC) (See Fig. 2 which shows a media station), and the circuitry that is capable of determining a quality of service to assign to an application to be executed by

the system to provide the service being capable of determining a quality of service to assign to a multimedia application to be executed by the MIMC to provide the service (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay"* – See Col. 1, lines 20-28).

Regarding Claim 19, Wentink in view of Cimini and Lin teaches the system of Claim 18. Wentink further teaches said circuitry capable of determining the quality of service to assign to the multimedia application also being capable of assigning one or more QoS (quality of service) parameters to the multimedia application (*"However, in accordance with an illustrative embodiment of the present invention, the release, for transmission, of data messages having the same level of priority is governed by a set of parameters that is common for all stations of the network"* – See Col. 2, lines 12-16).

Regarding Claim 20, Wentink in view of Cimini and Lin teaches the system of Claim 19. Wentink further teaches said circuitry capable of determining the quality of service to assign to the multimedia application also being capable of determining a size of packets to be used for transmitting data associated with the multimedia application

from the system to the client (*"Each contention window value is 1 octet in length and contains an unsigned integer"* – See Col. 8, lines 47-48).

Regarding Claim 21, Wentink in view of Cimini and Lin teaches the system of Claim 17. Wentink further teaches said circuitry capable of allocating the one or more resources to the multimedia application based, at least in part, on the quality of service also being capable of assigning at least one of:

a processing throughput (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a-20e"* – See Col. 4, lines 49-51; *"Application programs stored within the memory at each wireless station are executed by its CPU"* – See Col. 4, lines 51-53);

a queue length (*"Transmission opportunities are thus fairly allocated between all queues containing data messages of the same priority level"* – See Abstract); and

memory buffer size (*"Using the information received via VxD 26c, data message units from a given session are mapped to one of these n traffic classifications and placed in a corresponding one of queues 50_0 through 50_n within data buffers 34"* – See Col. 6, lines 11-14).

Regarding Claim 22, Wentink in view of Cimini and Lin teaches the system of Claim 17. Wentink further teaches that said circuitry is additionally capable of:

queuing the application for servicing (*"A method according to an illustrative embodiment of the invention comprises directing, to a first output queue at a first station*

of a communication network, data message units that are to be transmitted over a communication medium and that have a first traffic classification" – See Col. 2, lines 24-28);

and scheduling the application for servicing (*"Once placed within one of the queues, the data message units are released in accordance with a coordination function (CF) implemented in a scheduler 52 which prioritizes the transmission of data message units from each queue in accordance with a defined access control algorithm"* – See Col. 6, lines 14-19).

Regarding Claim 24, Wentink teaches a machine-readable medium having stored thereon instructions, the instructions when executed by a machine, result in the following:

in response, at least in part, to a request for a service from a system, determining a quality of service to assign to an application to be executed by the system to provide the service, the quality of service based, at least in part, on one or more service characteristics of the application (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay"* – See Col. 1, lines 20-28; *"an internal*

queue in any one of the stations is configured to delay and/or release data messages of a given priority level according to a set of rules" – See Col. 2, lines 16-19); and

allocating one or more resources to the application, the one or more resources based, at least in part, on the quality of service (*"Quality of service (QoS) mechanisms allocate transmission resources to different types or classes of data traffic so that certain traffic classes can be preferentially served over other classes"* – See Col. 1, lines 16-20).

Wentink does not explicitly teach determining a size of packets to be used for transmitting data associated with the service. Nor does Wentink explicitly teach allocating to the application, the one or more resources being based, at least in part, on a media access control service data unit (MSDU) size.

However, Cimini teaches determining a size of packets to be used for transmitting data (*"In step 144, the predictor 114 computes the desirable MSDU size according to Eq. (8) below"* – See Col. 8, lines 35-37; *"desirable MSDU size=desired throughput*(the average packet length/average throughput) Eq. (8)"* – See Col. 8, lines 39-40; Guaranteed throughput is considered to be a quality of service attribute. Thus, calculating an MSDU size as a function of desired throughput is the same as determining a size of packets based on the quality of service).

Cimini further teaches allocating resources to an application, the resources being based on a media access control service data unit (MSDU) size (*"the packet shaping mechanism sets a maximum MSDU size limit based on node data rate so that the maximum transmission time of all the nodes is the same"* – See Col. 1, lines 42-44; As

shown above, Wentink mentions several multimedia applications which rely on networks as a resource. Cimini allocates network resources (i.e., transmission time) by controlling the MSDU size).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Wentink of determining a quality of service to assign to an application to include the additional step of determining a size of packets to be used for transmitting data for the same reasons as those given with respect to Claim 1.

Wentink does not explicitly teach mapping one or more service characteristics to a class of service database and servicing the application in a bearer plane.

However, Lin does teach mapping one or more service characteristics to a class of service database (*"FIG. 5 depicts a process for classifying a frame that can be used in a QoS-driven WLAN according to the present invention"* – See Col. 13, lines 47-49; *"The QME examines the frame for information included in the received frame that is included in at least one of the classifier parameters in at least one of the classifier entries in a classification table 502"* – See Col. 13, lines 51-54; *"The QME examines the entries in the classification table in the order of descending search priorities when classifying the received frame. The VSID value contained in the first matched entry is used for identifying the VS 503 and the corresponding QoS parameter set for transporting the data frame between peer LLC entities of the BSS"* – See Col. 13, lines 55-60).

Lin also teaches servicing an application in a bearer plane (*"The FCE receives a data frame associated with the user session, which can be one of a voice session, a video session, a data session and a multimedia session. The data frame contains in-band quality of service (QoS) signaling information for the user session"* – See Abstract; *"End-to-end QoS values expected by a new in-band QoS signaling session, together with the corresponding frame classifier, are extracted directly from a data frame of the new session"* – See Col. 8, lines 52-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wentink to enable servicing an application (i.e., assigning QoS parameters) in a bearer plane for the same reasons as those given with respect to Claim 1.

Regarding Claim 25, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 24, wherein the system comprises a modified intelligent media center (MIMC) (See Fig. 2 which shows a media station), and said instructions that result in determining a quality of service to assign to the application result in determining a quality of service to assign to a multimedia application to be executed by the MIMC to provide the service (*"For example, in a network that supports multimedia services like video-on-demand, video conferencing, online brokerage, and electronic commerce, a QoS mechanism can prioritize time-sensitive multimedia data streams so that their packets are transmitted--over a communication medium or channel shared by*

two or more terminals or stations--with less delay and/or at a higher rate than packets of data streams less affected or unaffected by delay" – See Col. 1, lines 20-28).

Regarding Claim 26, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 25. Wentink further teaches that said instructions that result in determining the quality of service to assign to the multimedia application result in assigning one or more QoS (quality of service) parameters to the multimedia application (*"However, in accordance with an illustrative embodiment of the present invention, the release, for transmission, of data messages having the same level of priority is governed by a set of parameters that is common for all stations of the network"* – See Col. 2, lines 12-16).

Regarding Claim 27, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 26. Wentink further teaches the multimedia application being a wireless application (*"Initially, it should be noted that it may be desirable to increase the probability of successful transfer of (MSDUs) across a shared channel such, for example, as the wireless medium employed by the illustrative embodiment of the present invention"* – See Col. 3, lines 51-55), and the one or more QoS parameters comprising at least one of:

AIFS (arbitration inter-frame space) (arbitration inter-frame space) (*"the highest priority traffic class is directed to a queue that waits for a minimum interframe space interval* $QIFS_0$*"* – See Col. 7, lines 19-21);

CWmin (minimum contention window) (*"The scheduling function of the illustrative embodiment further specifies a contention window CWmin from which a random back off is computed for each queue"* – See Col. 6, lines 56-59);

CWmax (maximum contention window) (*"It should be noted that although a single value of CWmax common to all stations is suggested in FIG. 5, it is also possible to provide differentiated CWmax[i] values for the respective queues"* – See Col. 8, lines 10-13);

and PF (persistence factor) (*"the persistence factor, PF, is computed using the following procedure"* – See Col. 9, lines 6-7).

Regarding Claim 28, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 26. Wentink further teaches that said instructions, when executed by a machine, that result in determining the quality of service to assign to the multimedia application additionally result in determining a size of packets to be used for transmitting data associated with the multimedia application from the system to a client (*"Each contention window value is 1 octet in length and contains an unsigned integer"* – See Col. 8, lines 47-48).

Regarding Claim 29, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 24. Wentink further teaches that said instructions, when executed by a machine, result in allocating the one or more resources to the application

based, at least in part, on the quality of service additionally result in assigning at least one of:

a processing throughput (*"Each wireless station further includes a general-purpose processing unit (CPU) 20a-20e"* – See Col. 4, lines 49-51; *"Application programs stored within the memory at each wireless station are executed by its CPU"* – See Col. 4, lines 51-53);

a queue length (*"Transmission opportunities are thus fairly allocated between all queues containing data messages of the same priority level"* – See Abstract); and

memory buffer size (*"Using the information received via VxD 26c, data message units from a given session are mapped to one of these n traffic classifications and placed in a corresponding one of queues 50_0 through 50_n within data buffers 34"* – See Col. 6, lines 11-14).

Regarding Claim 30, Wentink in view of Cimini and Lin teaches the machine-readable medium of Claim 24. Wentink further teaches that said instructions, when executed by a machine, additionally result in:

queuing the application for servicing (*"A method according to an illustrative embodiment of the invention comprises directing, to a first output queue at a first station of a communication network, data message units that are to be transmitted over a communication medium and that have a first traffic classification"* – See Col. 2, lines 24-28); and

scheduling the application for servicing (*"Once placed within one of the queues, the data message units are released in accordance with a coordination function (CF) implemented in a scheduler 52 which prioritizes the transmission of data message units from each queue in accordance with a defined access control algorithm"* – See Col. 6, lines 14-19).

Response to Arguments

6. Applicant's arguments, see pre-appeal brief request for review, filed on August 12, 2009, with respect to the rejection of claims 1, 10, 17 and 24 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Lin et al. (US 6,804,222).

7. In the pre-appeal brief request, Applicant argues in substance that Wentink, Cimini and Hejza fail to teach or suggest servicing the application in a bearer plane. As Applicant points out on page 2 of the pre-appeal brief request, servicing the application in a bearer plane may include assigning a QoS to an application in the bearer plane (i.e., the same channel used for transmitting payload data). Newly cited reference Lin, among other things, discloses assigning QoS parameters with the use of in-band signaling. In-band signaling, as known to those of ordinary skill in the art, includes sending control information (i.e., QoS parameters) on the same channel as used for transmitting payload data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott M. Sciacca whose telephone number is (571) 270-1919. The examiner can normally be reached on Monday thru Friday, 7:30 A.M. - 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott M. Sciacca/
Examiner, Art Unit 2446

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2446